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(54) SEAT FRAME AND SEAT UNIT

(57) The present application discloses a seat frame and a seat unit. the seat frame includes a movable seat frame (100), the movable seat frame (100) includes a first side frame (110), a linkage mechanism (120), and an armrest member (130), the first side frame (110) includes a first longitudinal beam (111) and a main support member (112) connected to a lower end of the first longitudinal beam (111); the first longitudinal beam (111) is provided extending along a front-rear direction, the main support member (112) is configured to support on the ground; the linkage mechanism (120) is provided on a side of the first longitudinal beam (111) facing the linkage mechanism (120), and is configured to transform between a sitting position and a reclining position; the armrest member

(130) is fixedly connected to a side of the first side frame (110) away from the linkage mechanism (120). In the present application, by the main support member (112) of the first side frame (110) supporting on the ground, the first longitudinal beam (111) being connected to the main support member (112) causes the first side frame (110) to provide a stable supporting effect on the linkage mechanism (120) and the armrest member (130), thereby replacing a design of using the armrest member (130) to support on the ground in traditional products, and further causing the overall seat frame to be more stable, effectively reducing occurrence of shaking, and further optimizing a consumer's user experience.

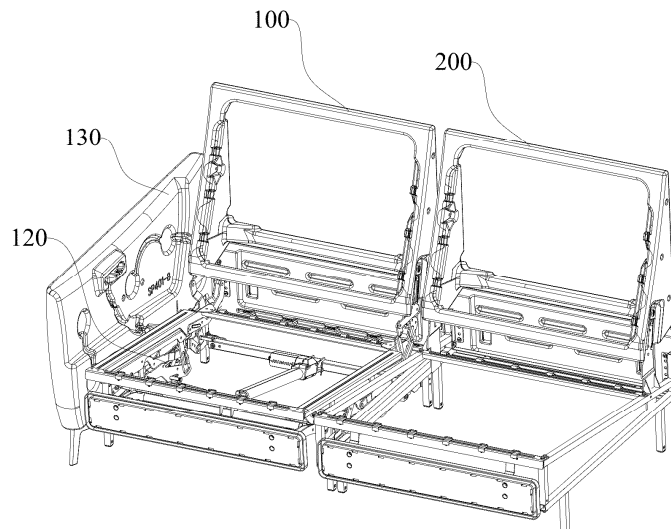


FIG. 1

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Description

TECHNICAL FIELD

[0001] The present application relates to the technical field of furniture, and particularly relates to a seat frame and a seat unit.

BACKGROUND

[0002] With continuous improvement in people's quality of life, the comfort requirements for sofas and seats are increasingly heightened, leading to the emergence of numerous functional and movable seat products on the market, including many sofas or seats with multi-position changing functions, aiming to meet comfort needs in different scenarios. However, in existing technical implementations, these movable seats generally rely on complex linkage mechanisms to achieve smooth transitions between various postures such as from a sitting position, a TV position to a reclining position, and simultaneously, to balance aesthetics and practicality, designers often tend to connect the linkage mechanism directly to the armrest and directly use the armrest as the sole ground support member. This design cleverly utilizes the armrest structure as a key component for connection and support, reducing the exposure of additional components and enhancing the overall visual appeal. However, such a design also leads to a significant drawback: with the armrest as the sole support member directly bearing weight and contacting the ground, its structural strength and stability are often insufficient to meet the complex mechanical demands generated during posture changes of the seat, particularly during frequent adjustments or under heavier loads, the overall stability of the seat significantly decreases, and shaking is prone to occur, which not only reduces the practicality of the seat but also invisibly lowers the consumer's sense of safety and comfort during use, seriously affecting the consumer's user experience.

SUMMARY

[0003] To overcome at least one of the defects described in the above prior art, the present application provides a seat frame, supported on the ground through a main support member of a first side frame, thereby providing stable support to a linkage mechanism and an armrest member, causing the overall seat frame to be more stable and effectively reducing the occurrence of shaking.

[0004] According to an embodiment of the present application, a seat frame includes a movable seat frame; the movable seat frame includes a first side frame, a linkage mechanism, and an armrest member; the first side frame includes a first longitudinal beam and a main support member connected to a lower end of the first longitudinal beam; the first longitudinal beam is provided

extending along a front-rear direction of the seat frame; the main support member is configured to support on the ground; the linkage mechanism is provided on a side of the first longitudinal beam facing the linkage mechanism, and is configured to transform between a sitting position and a reclining position; the armrest member is fixedly connected to a side of the first side frame opposite to the linkage mechanism.

[0005] In the seat frame, the main support member of the first side frame supports on the ground, and the first longitudinal beam of the first side frame is fixedly connected to the main support member, causing the first side frame to provide stable support to the linkage mechanism and the armrest member assembled on the first longitudinal beam, thereby replacing the design of supporting on the ground using the armrest member in traditional products, and thereby causing the overall seat frame to be more stable and effectively reducing the occurrence of shaking, further optimizing the consumer use experience.

[0006] According to some embodiments of the present application, the first longitudinal beam is connected with at least one hanger member; the armrest member is fixedly connected to the hanger member.

[0007] According to some embodiments of the present application, a side of the armrest member facing the ground is an armrest member bottom surface; the armrest member bottom surface is partially recessed inwardly forming an assembly groove; the assembly groove has a side facing the first side frame being open, so that the assembly groove has an abutting surface opposite to the ground; the armrest member bottom surface, at both ends located outside the assembly groove, is provided with a plurality of foot members configured to support on the ground; the hanger member is fixedly connected to the first longitudinal beam and the abutting surface respectively; where, a depth of the assembly groove cooperating with a height of the plurality of foot members, such that a bottom of the main support member and bottoms of the plurality of foot members are at a same support level after installation.

[0008] According to some embodiments of the present application, a bottom surface of the first longitudinal beam is a longitudinal beam bottom surface; the longitudinal beam bottom surface and the abutting surface are at a same installation plane.

[0009] According to some embodiments of the present application, a groove depth H1 of the assembly groove added to a height H2 of each of the plurality of foot members equals a design height X from the longitudinal beam bottom surface to a final support level.

[0010] According to some embodiments of the present application, the hanger member is a flat plate member; the flat plate member is provided with at least two first connection holes and at least two second connection holes; the first connection hole is configured to connect with the first longitudinal beam by a first fastener; the second connection hole is configured to connect with the

abutting surface by a second fastener.

[0011] According to some embodiments of the present application, at least two of the first connection holes are arranged along the length direction of the first longitudinal beam, at least two of the second connection holes are arranged along the length direction of the hanger member, and the length direction of the hanger member is perpendicular to the length direction of the first longitudinal beam.

[0012] According to some embodiments of the present application, a plurality of foot members configured to support on the ground are connected at a lower end of the armrest member, and the plurality of foot members are arranged along the front-rear direction of the seat frame.

according to some embodiments of the present application, a first auxiliary beam extending along the height direction of the seat frame is connected at a rear end of the first longitudinal beam, and the first auxiliary beam is fixedly connected to a rear end of the armrest member.

[0013] According to some embodiments of the present application, the seat frame further includes a fixed seat frame, a second side frame is provided at a side of the linkage mechanism facing the fixed seat frame, and the second side frame is fixedly connected to a side of the fixed seat frame facing the linkage mechanism.

[0014] According to some embodiments of the present application, a first connecting member is provided on the second side frame; a second connecting member is provided at a side of the fixed seat frame facing the linkage mechanism or the fixed seat frame adjacent thereto, and the second connecting member is configured to be cooperatively connected with the first connecting member or the second connecting member adjacent thereto.

[0015] According to some embodiments of the present application, the linkage mechanism includes at least two mechanical extension devices arranged along the transverse direction, a third side frame is connected at a side of the mechanical extension device facing the mechanical extension device adjacent thereto, and the third side frame is configured to fixedly connect two adjacent mechanical extension devices.

[0016] According to some embodiments of the present application, the seat frame further includes an auxiliary support member, and the auxiliary support member is provided at a lower end of the second side frame and/or the third side frame.

[0017] According to some embodiments of the present application, the seat frame further includes a fixed support member, and the fixed support member is provided at a lower end of the fixed seat frame.

[0018] The present application also proposes a seat unit including the seat frame as described above based on the same inventive concept.

[0019] In summary, the seat frame provided by the present application has the following technical effects:

[0020] By the main support member of the first side

frame supporting on the ground, and the first longitudinal beam of the first side frame being fixedly connected to the main support member, the first side frame is caused to provide a stable support function for the linkage mechanism and the armrest member assembled on the first longitudinal beam, thereby replacing the design of using the armrest member to support on the ground in traditional products, further causing the overall seat frame to be more stable, effectively reducing the occurrence of shaking, and optimizing the consumer use experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021]

FIG. 1 is a schematic structural diagram of a seat frame according to an embodiment of the present application;

FIG. 2 is a schematic structural diagram of a movable seat frame according to an embodiment of the present application;

FIG. 3 is a schematic structural diagram of a first side frame according to an embodiment of the present application;

FIG. 4 is another schematic structural diagram of the first side frame according to an embodiment of the present application;

FIG. 5 is another schematic structural diagram of the movable seat frame according to an embodiment of the present application;

FIG. 6 is a left view of a half portion of a mechanical extension device according to an embodiment of the present application;

FIG. 7 is a right view of the half portion of the mechanical extension device according to an embodiment of the present application;

FIG. 8 is a schematic structural diagram of a fixed seat frame according to an embodiment of the present application;

FIG. 9 is another schematic structural diagram of the fixed seat frame according to an embodiment of the present application;

FIG. 10 is a schematic structural diagram of a connection between an armrest member and a first side frame according to an embodiment of the present application;

FIG. 11 is an enlarged view of area A in FIG. 10;

FIG. 12 is an exploded schematic structural diagram of the armrest member and the first side frame according to an embodiment of the present application;

FIG. 13 is an exploded schematic structural diagram of the first side frame according to an embodiment of the present application.

[0022] The meanings of reference numerals are as follows:

100, movable seat frame; 110, first side frame; 111, first

longitudinal beam; 1111, longitudinal beam bottom surface; 112, main support member; 113, hanger member; 1131, first connection hole; 1132, second connection hole; 1133, first fastener; 1134, second fastener; 114, first auxiliary beam; 115, connecting portion; 120, linkage mechanism; 121, mechanical extension device; 122, half portion of the mechanical extension device; 123, fixing plate; 124, fixed cross beam; 125, linear electric actuator; 126, seat assembly; 127, backrest assembly; 128, leg assembly; 130, armrest member; 131, foot member; 132, armrest member bottom surface; 133, assembly groove; 134, abutting surface; 140, second side frame; 141, first connecting member; 142, auxiliary support member; 143, second longitudinal beam; 144, second auxiliary beam; 200, fixed seat frame; 201, second connecting member; 202, fixed support member; 203, third longitudinal beam; 204, third auxiliary beam.

DETAILED DESCRIPTION

[0023] For better understanding and implementation, the technical solutions in the embodiments of the present application will be described clearly and completely below in combination with the accompanying drawings in the embodiments of the present application.

[0024] In the description of the present application, it should be noted that the orientation or positional relationships indicated by the terms "upper", "lower", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "inner", "outer", etc. are based on the orientation or positional relationships shown in the accompanying drawings, and are only for facilitating the description of the present application and simplifying the description, rather than indicating or implying that the indicated device or element must have a specific orientation, be constructed and operated in a specific orientation, and thus should not be construed as limiting the present application.

[0025] Unless otherwise defined, all technical and scientific terms used herein have the same meanings as commonly understood by those skilled in the technical field of the present application. The terms used in the specification of the present application herein are only for the purpose of describing specific embodiments and are not intended to limit the present application.

[0026] Referring to FIGS. 1, 2, 3, 4 and 5, the present application discloses a seat frame, applied to a seat unit. The seat frame includes a movable seat frame 100, the movable seat frame 100 includes a first side frame 110, a linkage mechanism 120, and an armrest member 130. In some implementations, the first side frame 110 includes a first longitudinal beam 111 and a main support member 112 connected to a lower end of the first longitudinal beam 111; the first longitudinal beam 111 is provided extending along a front-rear direction of the seat frame, the main support member 112 is configured to support on the ground; the linkage mechanism 120 is provided on a side of the first longitudinal beam 111 facing the linkage

mechanism 120, and is capable of transforming between a sitting position and a reclining position; the armrest member 130 is fixedly connected to a side of the first side frame away from the linkage mechanism 120. Preferably, by the main support member 112 of the first side frame 110 supporting on the ground, and the first longitudinal beam 111 of the first side frame 110 being fixedly connected to the main support member 112, the first side frame 110 is driven to provide stable support for the linkage mechanism 120 and the armrest member 130 assembled on the first longitudinal beam 111, thereby replacing the design in traditional products where the armrest member 130 supports on the ground, and further driving the seat frame as a whole to be more stable, effectively reducing the occurrence of shaking, and further optimizing the user experience of consumers.

[0027] Optionally, the first longitudinal beam 111 and the main support member 112 are both made of strip-shaped square tubes, causing the entire first side frame 110 to possess higher structural strength, thereby enabling better support to be provided to the linkage mechanism 120 and the armrest member 130; optionally, the first longitudinal beam 111 and the main support member 112 may be fixedly connected through welding, threaded connection, riveting, insertion, and other ways; optionally, the lower end of the first longitudinal beam 111 is connected with a plurality of the main support members 112, referring to FIGS. 3, 4, and 5, in the present embodiment, the lower end of the first longitudinal beam 111 is connected with two of the main support members 112, the two main support members 112 are arranged at the lower end of the first longitudinal beam 111 along the front-rear direction of the seat frame, so that the main support members 112 may more stably support the first longitudinal beam 111.

[0028] In some implementations, the first longitudinal beam 111 is connected with at least one hanger member 113, the armrest member 130 is fixedly connected to the hanger member 113. Preferably, the armrest member 130 is fixedly connected to the first longitudinal beam 111 through the hanger member 113, so that the first longitudinal beam 111 provides a reliable supporting force to the armrest member 130 through the hanger member 113. Optionally, there may be a plurality of hanger members 113, the plurality of hanger members 113 are arranged along the front-rear direction of the seat frame. Referring to FIGS. 3, 4, and 5, in the present embodiment, the two hanger members 113 are arranged on the first longitudinal beam 111 along the front-rear direction of the seat frame, the hanger member 113 is fixedly connected to the first longitudinal beam 111 through such as welding, threaded connection, riveting, and insertion, the free end of the hanger member 113 extends transversely in a direction away from the linkage mechanism 120 to the bottom of the armrest member 130, the armrest member 130 is fixedly connected to the hanger member 113 through such as threaded connection, riveting, and insertion, causing the first longitudinal

beam 111 to support and fix the armrest member 130 through the hanger member 113, thereby achieving a stable connection between the armrest member 130 and the first side frame 110.

[0029] Optionally, the armrest member 130 is made by an injection molding process, meaning the armrest member 130 is an independent part, it may be directly assembled onto the hanger member 113 without requiring complex assembly, effectively improving production efficiency, meanwhile, the armrest member 130 made by the injection molding process has good physical properties and chemical stability, being able to improve the service life of the seat frame, and it is easy to perform post-processing such as spraying, electroplating, and printing, to meet different aesthetic and functional needs.

[0030] In some implementations, the lower end of the armrest member 130 may not be provided with the foot member 131, such that the armrest member 130 is directly supported and fixed by the first longitudinal beam 111 via the hanger member 113. Preferably, the lower end of the armrest member 130 is connected with a plurality of foot members 131 configured to support on the ground, the plurality of foot members 131 being arranged along the front-rear direction of the seat frame. In this manner, the plurality of foot members 131 and the first side frame 110 jointly support the armrest member 130, further improving the stability of the armrest member 130. Referring to FIGS. 1, 2 and 3, in the present embodiment, two foot members 131 are provided, the two foot members 131 being respectively provided at the front end and the rear end of the armrest member 130. Further, the spacing between the two main support members 112 is smaller than the spacing between the two foot members 131, and the first side frame 110 is located between the armrest member 130 and the linkage mechanism 120, in this manner, the main support members 112 may be effectively hidden, so that the seat unit manufactured from the seat frame is more aesthetically pleasing, satisfying consumers' pursuit of beauty.

[0031] In some implementation scenarios where foot members 131 are provided, because foot members 131 selected for different seat frames have different heights, in order to ensure that the armrest member 130 is firmly connected to the first side frame 110 and the armrest member bottom surface 132 may remain level, a member must be provided to compensate for the height difference between the bottom of the foot member 131 and the first side frame 110. For this purpose, it is usually necessary to improve the hanger member 113, i.e., changing the height of the vertical side plate of the hanger member 113 to achieve this, which directly leads to the non-standardization problem of the hanger member 113. For this purpose, in some implementations, referring to FIGS. 10 to 13, on the armrest member bottom surface 132, in the area corresponding to the connection with the first side frame 110, a portion is recessed inward to form an assembly groove 133. The assembly groove 133 is completely open on the side facing the first side frame

110, thereby forming a surface inside the groove that is parallel and opposite to the ground, i.e., an abutting surface 134. by precisely controlling the groove depth H1 of the assembly groove 133, the variation in the height H2 of the foot member 131 may be inversely compensated. According to the relational expression $H1+H2=X$, where X is the design height of the longitudinal beam bottom surface from the ground, simply adjusting H1 as needed during the production of the armrest member 130 ensures that after installation, regardless of the value of H2, the abutting surface 134 may always be in the same ideal installation plane as the longitudinal beam bottom surface. Thereby achieving flexible adaptation to foot members 131 of different heights, while providing a unified installation interface for standardizing the hanger member 113.

[0032] Referring to FIGS. 10 to 13, the hanger member 113 is a core component for achieving standardization. As shown in FIG. 3, a standardized flat plate member is used to replace the traditional hanger member 113 integrally bent and formed in multiple specifications. The plate is provided with at least two sets of connection holes, each set of connection holes includes a first connection hole 1131 and a second connection hole 1132, the first connection hole 1131 is configured to connect to the first longitudinal beam 111, and the second connection hole 1132 is configured to connect to the abutting surface 134. Preferably, the bottom surface of the first longitudinal beam 111 is a longitudinal beam bottom surface 1111, the longitudinal beam bottom surface 1111 and the abutting surface 134 are in the same installation plane, in other embodiments, the hanger member 113 may also adopt other structures, which is not specifically limited in the present embodiment, as long as the hanger member 113 is configured to be standardized for production and installation.

[0033] During installation, placing the standardized hanger member 113 below the first longitudinal beam 111, aligning the first connection hole 1131 with a preset hole position on the longitudinal beam bottom surface 1111 or directly drilling a hole, and fastening with a first fastener 1133. Then passing a second fastener 1134 through the second connection hole 1132 of the hanger member 113, screwing into a preset threaded hole on the abutting surface 134 or forming a tight connection, thereby firmly hanging and fixing the armrest member 130 on the first side frame 110.

[0034] Therefore, the same flat plate hanger member 113 may be mass-produced, leading to a significant reduction in mold cost, raw material management cost, and inventory cost. During installation, installation workers do not need to select, directly take and use, being both fast and accurate, preventing rework caused by taking the wrong specification. At the same time, the flat plate structure may achieve surface contact fixation through multiple screws, being more stable and having more uniform force distribution than the line or point contact of the integrally bent hanger member 113. The distribu-

tion directions of the first connection hole 1131 and the second connection hole 1132 help disperse forces in different directions, improving connection reliability. In the present embodiment, the distribution directions of the first connection hole 1131 and the second connection hole 1132 are perpendicular to each other. In some implementations, the rear end of the first longitudinal beam 111 is connected with a first auxiliary beam 114 extending along a height direction of the seat frame, and the first auxiliary beam 114 is fixedly connected to a rear end of the armrest member 130. Preferably, by jointly fixedly connecting the armrest member 130 through the first longitudinal beam 111 and the first auxiliary beam 114, connection reliability between the armrest member 130 and the first side frame 110 is improved. Further, referring to FIGS. 3, 4, and 5, in the present embodiment, the main support member 112 provided at a front end of the first longitudinal beam 111 extends upward to form a connecting portion 115, and the connecting portion 115 is fixedly connected to the armrest member 130, thus, the first auxiliary beam 114 and the connecting portion 115 fixedly connect the armrest member 130 at front and rear ends of the first longitudinal beam 111, respectively, and at the same time, a middle portion of the first longitudinal beam 111 is fixedly connected to the armrest member 130 through two hanger members 113, thus, leading to the first side frame 110 providing a sufficiently large supporting force to the armrest member 130, leading to the armrest member 130 and the first side frame 110 forming a stable whole, effectively reducing shaking of the armrest member 130, and further optimizing consumer use experience.

[0035] In some implementations, the seat frame further includes a fixed seat frame 200, meaning the seat frame has both a movable seat frame 100 and a fixed seat frame 200, and the fixed seat frame 200 does not have the linkage mechanism 120. Preferably, a second side frame 140 is provided at a side of the linkage mechanism 120 facing the fixed seat frame 200, and the second side frame 140 is fixedly connected to a side of the fixed seat frame 200 facing the linkage mechanism 120. Taking a two-person seat unit as an example, referring to FIG. 1, this two-person seat unit has one movable seat frame 100 and one fixed seat frame 200. Preferably, the first side frame 110 is provided at a side of the linkage mechanism 120 away from the fixed seat frame 200, the armrest member 130 is fixedly connected to a side of the first side frame 110 away from the linkage mechanism 120, the second side frame 140 is provided at a side of the linkage mechanism 120 facing the fixed seat frame 200, and the second side frame 140 and the fixed seat frame 200 are fixedly connected by means such as threaded connection, riveting, insertion connection, to achieve a stable connection between the movable seat frame 100 and the fixed seat frame 200, causing the movable seat frame 100 and the fixed seat frame 200 to be connected side by side along a transverse direction to form an integrated whole, which may thereby be applied to a seat

unit having two-person seating.

[0036] In some implementations, at least one of the fixed seat frame 200 is provided in the seat frame. Optionally, the quantity of the fixed seat frame 200 is adjustable accordingly according to requirements, for adjusting the seat frame to a longer seat unit such as a three-seater, a four-seater, and a five-seater. Preferably, a first connecting member 141 is provided on the second side frame 140; a second connecting member 201 is provided on a side of the fixed seat frame 200 facing the linkage mechanism 120 or the fixed seat frame 200 adjacent thereto; the second connecting member 201 is configured to cooperate and connect with the first connecting member 141 or the second connecting member 201 adjacent thereto. Optionally, the second connecting member 201 and the first connecting member 141 or the second connecting member 201 adjacent thereto are connectable via such as pin connection, snap-fit connection, and bolt connection. The innovation of the present application does not lie in the specific formation or connection method of the connecting member, which will not be listed one by one here; taking a three-seater seat unit as an exemplary explanation, the three-seater seat unit has one of the movable seat frame 100 (hereinafter referred to as movable frame A for convenience of description) and two of the fixed seat frame 200 (hereinafter referred to as fixed frame B and fixed frame C for convenience of description); movable frame A, fixed frame B, and fixed frame C are arranged along the transverse direction, namely movable frame A and fixed frame B are adjacent, and fixed frame B and fixed frame C are adjacent; movable frame A located at an end of the arrangement has a linkage mechanism 120 independently changeable between a sitting position and a reclining position; the first side frame 110 is provided on a side of the linkage mechanism 120 away from the fixed seat frame 200. The armrest member 130 is fixedly connected to a side of the first side frame 110 away from the linkage mechanism 120; the second side frame 140 is provided on a side of the linkage mechanism 120 facing fixed frame B; the first connecting member 141 on the second side frame 140 and the second connecting member 201 on a side of fixed frame B facing movable frame A cooperate and connect; fixed frame B and fixed frame C respectively have their respective second connecting member 201 on their mutually facing sides; the two second connecting members 201 cooperate and connect with each other, causing movable frame A, fixed frame B, and fixed frame C to be connected side by side along the transverse direction. Further, the quantity of the fixed seat frame 200 is increased or decreased according to a required length, improving expandability of the seat unit. For this purpose, removing an extra fixed seat frame 200 requires only disconnecting the connection between the second connecting member 201 and the first connecting member 141 or the second connecting member 201 adjacent thereto, or arranging a fixed seat frame 200 to be added, other fixed seat frame(s) 200, and/or the

movable seat frame 100 sequentially along the transverse direction and driving the second connecting member 201 and the first connecting member 141 or the second connecting member 201 adjacent thereto to connect.

[0037] Further, referring to FIG. 2, the second side frame 140 includes a second longitudinal beam 143 extending along the front-rear direction of the seat frame and a second auxiliary beam 144 extending along the height direction of the seat frame, the second auxiliary beam 144 is provided at a rear end of the second longitudinal beam 143. Further, a number of the first connecting member 141 is a plurality, distributed on the second longitudinal beam 143 and the second auxiliary beam 144. Referring to FIG. 2, each of the second longitudinal beam 143 and the second auxiliary beam 144 has one first connecting member 141. Correspondingly, the fixed seat frame 200 includes a third longitudinal beam 203 extending along the front-rear direction of the seat frame and a third auxiliary beam 204 extending along the height direction of the seat frame, the third auxiliary beam 204 is provided at a rear end of the third longitudinal beam 203. Referring to FIG. 2, each of the third longitudinal beam 203 and the third auxiliary beam 204 has one second connecting member 201. Thus, the first connecting member 141 on the second longitudinal beam 143 is fixedly connected to the second connecting member 201 on the third longitudinal beam 203, and the first connecting member 141 on the second auxiliary beam 144 is fixedly connected to the second connecting member 201 on the third auxiliary beam 204, so as to implement a stable connection between the movable seat frame 100 and the fixed seat frame 200.

[0038] Referring to FIGS. 8 and 9, the fixed seat frame 200 includes two sets of the third longitudinal beam 203 and the third auxiliary beam 204, both front and rear ends of the two third longitudinal beams 203 are fixedly connected by a connecting rod member. Optionally, a frame structure configured to form a seating portion or to support a seat cushion is further provided above the third longitudinal beam 203, the innovative point of the present application does not lie in the specific formation manner of this frame structure, which is not listed one by one herein.

[0039] In some implementations, the seat frame may be constituted only by the movable seat frame 100, the movable seat frame 100 may be applied to a single-seat seat unit, a two-seat seat unit or a multi-seat seat unit; optionally, in response to the movable seat frame 100 being applied to a two-seat seat unit or a multi-seat seat unit, the linkage mechanism 120 includes at least two mechanical extension devices 121 arranged along the transverse direction, a side of the mechanical extension device 121 facing the mechanical extension device 121 adjacent thereto is connected with a third side frame, the third side frame is configured to fixedly connect two adjacent mechanical extension devices 121. Now taking a three-seat seat unit as an exemplary explanation, the

three-seat seat unit has three mechanical extension devices 121, for convenience of description, defining the three mechanical extension devices 121 as device A, device B and device C respectively, device A, device B and device C are arranged along the transverse direction, and each mechanical extension device 121 may independently transform between a sitting position and a reclining position, device A and device C are located at two ends of the arrangement. Therefore, a side of device A and C deviating from device B is provided with the first side frame 110, a side of the first side frame 110 deviating from the mechanical extension device 121 is fixedly connected with the armrest member 130, adjacent device A and device B respectively have their own third side frames on their mutually facing sides, correspondingly, adjacent device C and device B also respectively have their own third side frames on their mutually facing sides, by means of mutual connection of these four third side frames, device A, device B and device C are connected side by side along the transverse direction, two adjacent third side frames may be connected by such as riveting, threaded connection, and plug-in connection. This modular construction manner may increase or decrease the number of mechanical extension devices 121, i.e., the number of seats, according to a required length, improving scalability of the seat unit. i.e., it may also be adjusted to a two-seat, four-seat, five-seat or longer seat unit according to needs. In response to the seat unit being constructed as a single-seat seat unit, the seat unit includes only one set of mechanical extension device 121, a pair of first side frames 110 located on left and right sides of the mechanical extension device 121 and armrest members 130 directly fixedly connected to the first side frames 110.

[0040] Further, the seat frame is constituted by the movable seat frame 100 and the fixed seat frame 200 together, the linkage mechanism 120 includes at least one mechanical extension device 121 arranged along a transverse direction, the mechanical extension device 121 is arranged along the transverse direction with the fixed seat frame 200, the mechanical extension device 121 located at an end of the arrangement has the first side frame 110, the first side frame 110 is provided at an outer side of the mechanical extension device 121, and the armrest member 130 is fixedly connected to a side of the first side frame 110 facing away from the mechanical extension device 121, if another mechanical extension device 121 is adjacent to the mechanical extension device 121, then the two adjacent mechanical extension devices 121 each have their own third side frame on their mutually facing sides, the two adjacent mechanical extension devices 121 are connected side by side along the transverse direction by connecting the two third side frames together; if the fixed seat frame 200 is adjacent to the mechanical extension device 121, then the second side frame 140 is provided on a side of the mechanical extension device 121 facing the fixed seat frame 200, the first connecting member 141 on the second side frame

140 is configured to connect with the second connecting member 201 on a side of the fixed seat frame 200 facing the mechanical extension device 121, to connect the mechanical extension device 121 adjacent thereto and the fixed seat frame 200 side by side along the transverse direction. Further, a quantity of the fixed seat frame 200 and/or the mechanical extension device 121 is increased or decreased according to a required length, improving expandability of a seat unit.

[0041] Further, the third side frame is configured to be provided with the first connecting member 141, the two adjacent third side frames are fixedly connected via the first connecting member 141, that is, the mechanical extension device 121 is also configured to be fixedly connected to the fixed seat frame 200 via the third side frame; preferably, the second side frame 140 and the third side frame adopt an identical structure, to optimize a structure of the movable seat frame 100 and improve versatility of components.

[0042] In some implementations, the seat frame further includes a fixed support member 202, the fixed support member 202 is provided at a lower end of the fixed seat frame 200. In this way, referring to FIGS. 1, 8, and 9, the seat frame has the movable seat frame 100 and the fixed seat frame 200, the fixed seat frame 200 is supported on the ground via the fixed support member 202, driving the fixed seat frame 200 to provide a stable support effect to a side of the linkage mechanism 120 facing away from the first side frame 110 via the second side frame 140, while the linkage mechanism 120 provides a stable support effect on a side facing the first side frame 110, thereby driving an entirety of the seat frame to be more stable, effectively reducing shaking, and optimizing user experience for consumers.

[0043] In some implementations, the seat frame further includes an auxiliary support member 142, the auxiliary support member 142 being provided at a lower end of the second side frame 140 and/or the third side frame. In this way, referring to FIGS. 1, 2, 3, 4, and 5, a side of the linkage mechanism 120 facing the second side frame 140 is supported on the ground via the auxiliary support member 142 at the lower end of the second side frame 140, leading to a side of the linkage mechanism 120 opposite to the first side frame 110 also being able to obtain stable support, thereby improving overall stability of the seat frame and effectively reducing shaking; similarly, a side of the mechanical extension device 121 facing the third side frame is supported on the ground via the auxiliary support member 142 at the lower end of the third side frame, especially in response to the seat frame consisting only of the movable seat frame 100, both sides of the mechanical extension device 121 located in a middle of an arrangement having the third side frame, in this way, being supported on the ground via the auxiliary support member 142 at the lower end of the third side frame, driving the third side frame to provide stable support for the mechanical extension device 121, leading to the seat frame as a whole being more stable and

shaking being effectively reduced.

[0044] In some implementations, a seat unit includes the seat frame as described above. Referring to FIG. 1, the seat frame of the seat unit is jointly constituted by the movable seat frame 100 and the fixed seat frame 200, the movable seat frame 100 is provided with the linkage mechanism 120, and the linkage mechanism 120 is provided with a mechanical extension device 121 configured to transform at least between a sitting position and a reclining position. Referring to FIG. 4, the mechanical extension device 121 includes half portions of the mechanical extension device 122 provided in mirror symmetry on left and right sides. Each half portion of the mechanical extension device 122 is provided with a fixing plate 123 extending longitudinally along a front-rear direction of the movable seat. Each half portion of the mechanical extension device 122 is assembled on a side of the first longitudinal beam 111 facing the mechanical extension device 121 via its respective fixing plate 123, or each half portion of the mechanical extension device 122 is assembled on a side of the second side frame 140 or the third side frame facing the mechanical extension device 121 via its respective fixing plate 123. Each fixing plate 123 is attached to a common fixed cross beam 124 via a connecting rod member, and the fixed cross beam 124 is located at a backrest side, i.e., a rear end of the seat frame; further, the main support member 112 and the auxiliary support member 142 are also attached to the fixed cross beam 124 via corresponding connecting rod members, respectively. Preferably, referring to FIGS. 6 and 7, the mechanical extension device 121 further includes a linear electric actuation device 125, a seat assembly 126, a backrest assembly 127 pivotally connected to a rear end of the seat assembly 126, and a leg assembly 128 pivotally connected to a front end of the seat assembly 126. The linear electric actuation device 125 is configured to drive the leg assembly 128 to extend forward, simultaneously drive the seat assembly 126 to move forward, and a rearmost endpoint of the backrest assembly 127 has a forward-moving component and does not have a backward-moving component in response to transformation between the sitting position and the reclining position, so that the seat unit is applicable to various seat units such as 'zero gravity' and 'zero wall proximity', and the innovation point of the present application is not in the specific structure of the mechanical extension device 121, which is not listed one by one herein.

[0045] The technical means disclosed in the solution of the present application are not limited to the technical means disclosed in the above implementations, and also include technical solutions composed of any combination of the above technical features. It should be pointed out that for those of ordinary skill in the art, several improvements and modifications may be made without departing from the principle of the present application, and these improvements and modifications are also regarded as the protection scope of the present application.

Claims

1. A seat frame, comprising a movable seat frame (100), the movable seat frame (100) comprising a first side frame (110), a linkage mechanism (120), and an armrest member (130), wherein,
 - the first side frame (110) comprises a first longitudinal beam (111) and a main support member (112) connected to a lower end of the first longitudinal beam (111);
 - the first longitudinal beam (111) is provided extending along a front-rear direction of the seat frame, the main support member (112) is configured to support on the ground;
 - the linkage mechanism (120) is provided at a side of the first longitudinal beam (111) facing the linkage mechanism (120), and is configured to transform between a sitting position and a reclining position;
 - the armrest member (130) is fixedly connected to a side of the first side frame (110) away from the linkage mechanism (120).
2. The seat frame according to claim 1, wherein the first longitudinal beam (111) is connected with at least one hanger member (113), and the armrest member (130) is fixedly connected to the hanger member (113).
3. The seat frame according to claim 1, wherein a lower end of the armrest member (130) is connected with a plurality of foot members (131) configured to support on the ground, and the plurality of foot members (131) are arranged along the front-rear direction of the seat frame.
4. The seat frame according to claim 2, wherein a side of the armrest member (130) facing the ground is an armrest member bottom surface (132), the armrest member bottom surface (132) is partially concave to form an assembly groove (133), the assembly groove (133) is open toward a side of the first side frame (110), so that the assembly groove (133) has an abutting surface (134) opposite to the ground;
 - the armrest member bottom surface (132) is provided, at two ends outside the assembly groove (133), with a plurality of foot members (131) configured to support on the ground, the hanger member (113) is respectively fixedly connected to the first longitudinal beam (111) and the abutting surface (134);
 - wherein, through cooperation of a depth of the assembly groove (133) and heights of the plurality of foot members (131), a bottom of the main support member (112) and bottoms of the plurality of foot members (131) are at a same support level after installation.
5. The seat frame according to claim 4, wherein a bottom surface of the first longitudinal beam (111) is a longitudinal beam bottom surface (1111), and the longitudinal beam bottom surface (1111) and the abutting surface (134) are at a same installation plane.
6. The seat frame according to claim 5, wherein a sum of a groove depth H1 of the assembly groove (133) and a height H2 of each of the plurality of foot members (131) is equal to a design height X of the longitudinal beam bottom surface (1111) from a final support level.
7. The seat frame according to claim 4, wherein the hanger member (113) is a flat plate member, the hanger member (113) is provided with at least two first connection holes (1131) and at least two second connection holes (1132), the first connection holes (1131) are configured to be connected, via a first fastener (1133), to the first longitudinal beam (111), and the second connection holes (1132) are configured to be connected, via a second fastener (1134), to the abutting surface (134).
8. The seat frame according to claim 7, wherein the at least two first connection holes (1131) are arranged along a length direction of the first longitudinal beam (111), the at least two second connection holes (1132) are arranged along a length direction of the hanger member (113), and the length direction of the hanger member (113) is perpendicular to the length direction of the first longitudinal beam (111).
9. The seat frame according to claim 1, wherein a rear end of the first longitudinal beam (111) is connected to a first auxiliary beam (114) provided to extend along a height direction of the seat frame, and the first auxiliary beam (114) is fixedly connected to a rear end of the armrest member (130).
10. The seat frame according to claim 1, further comprising a fixed seat frame (200), a second side frame (140) is provided on a side of the linkage mechanism (120) facing the fixed seat frame (200), and the second side frame (140) is fixedly connected to a side of the fixed seat frame (200) facing the linkage mechanism (120).
11. The seat frame according to claim 10, wherein the second side frame (140) is provided with a first connecting member (141); the fixed seat frame (200) is provided, on a side thereof facing the linkage mechanism (120) adjacent thereto or another fixed seat frame (200), with a second connecting member (201), and the second connecting member (201) is

configured to be connected in cooperation with the first connecting member (141) or a second connecting member (201) adjacent thereto.

12. The seat frame according to claim 11, wherein the linkage mechanism (120) comprises at least two mechanical extension devices (121) arranged side by side in a transverse direction of the seat frame, a third side frame is connected to a side of the mechanical extension device (121) facing another mechanical extension device (121) adjacent thereto, and the third side frame is configured to fixedly connect two adjacent mechanical extension devices (121). 5 10 15
13. The seat frame according to claim 12, further comprising an auxiliary support member (142), the auxiliary support member (142) being provided at a lower end of the second side frame (140) and/or a lower end of the third side frame. 20
14. The seat frame according to claim 10, further comprising a fixed support member (202), and the fixed support member (202) is provided at a lower end of the fixed seat frame (200). 25
15. A seat unit, comprising the seat frame according to any one of claims 1 to 14. 30

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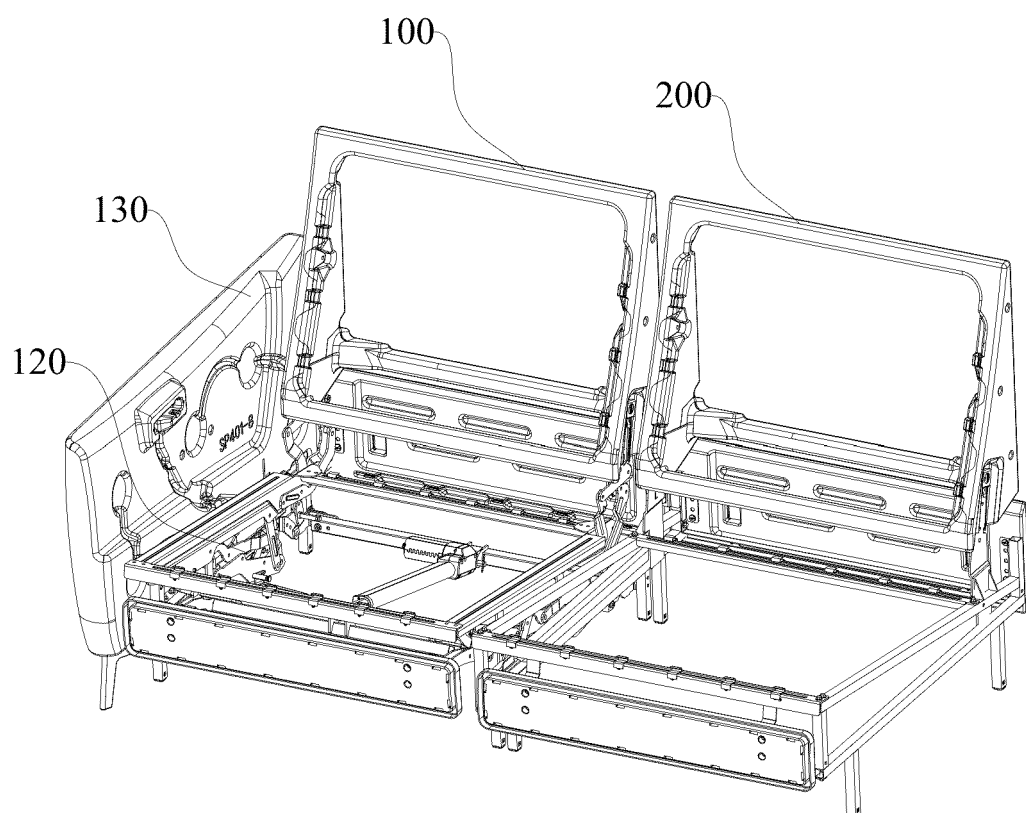


FIG. 1

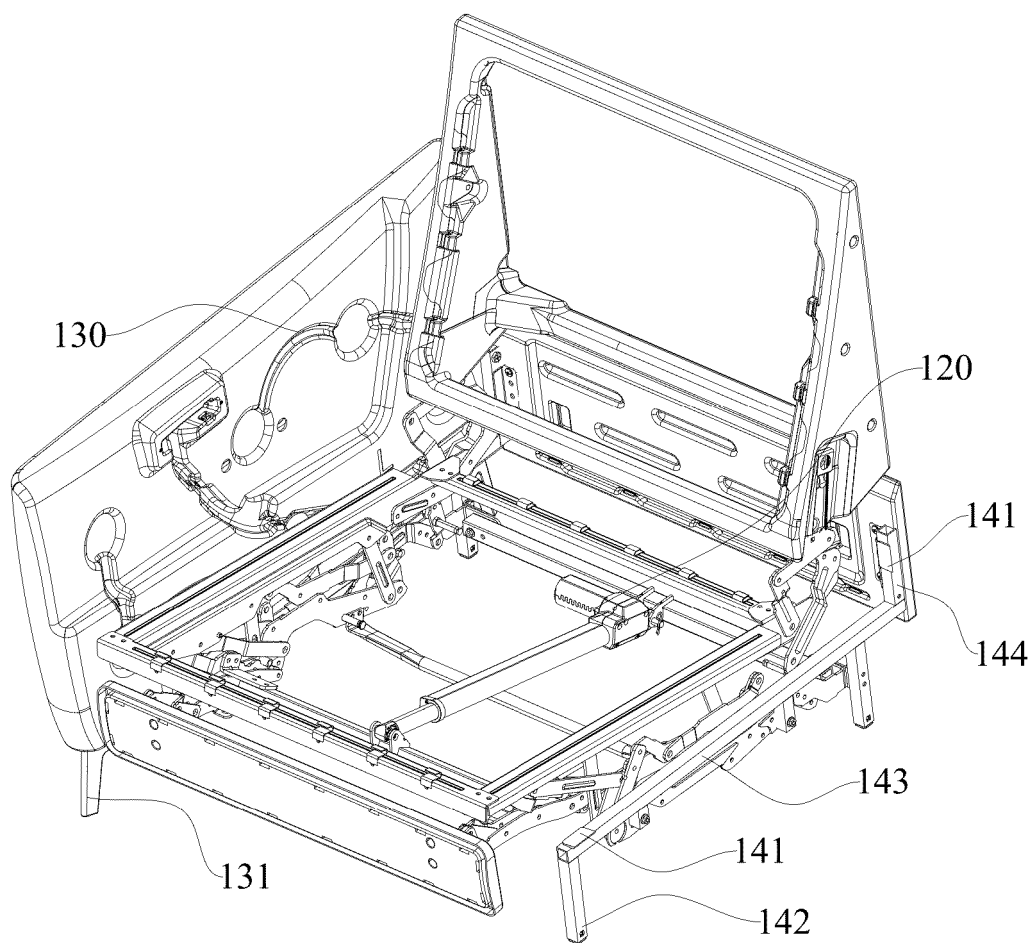


FIG. 2

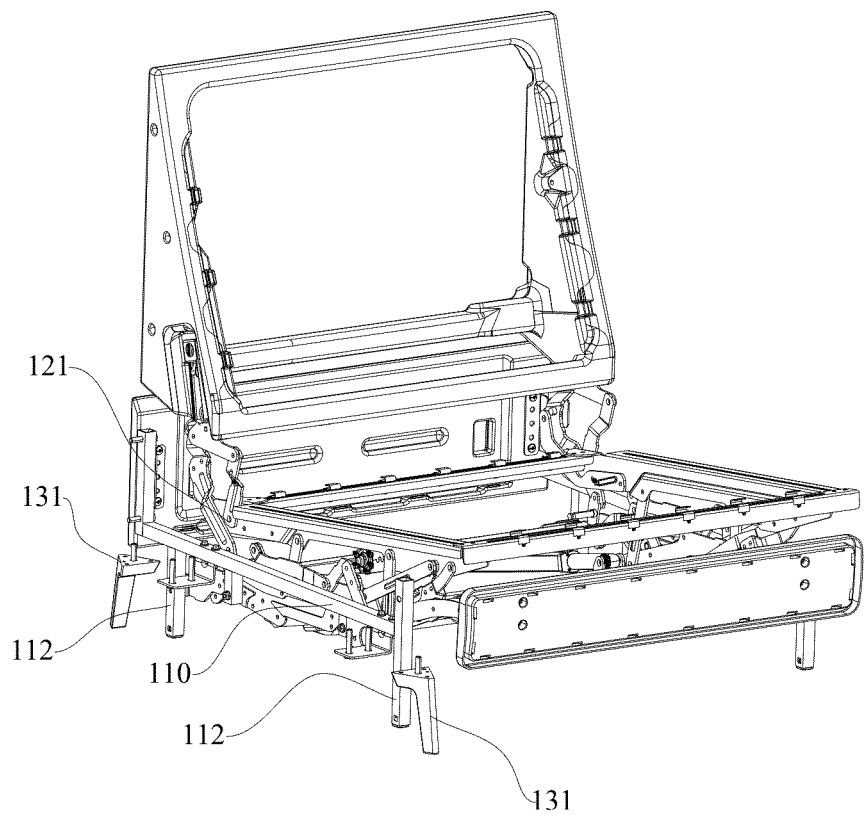


FIG. 3

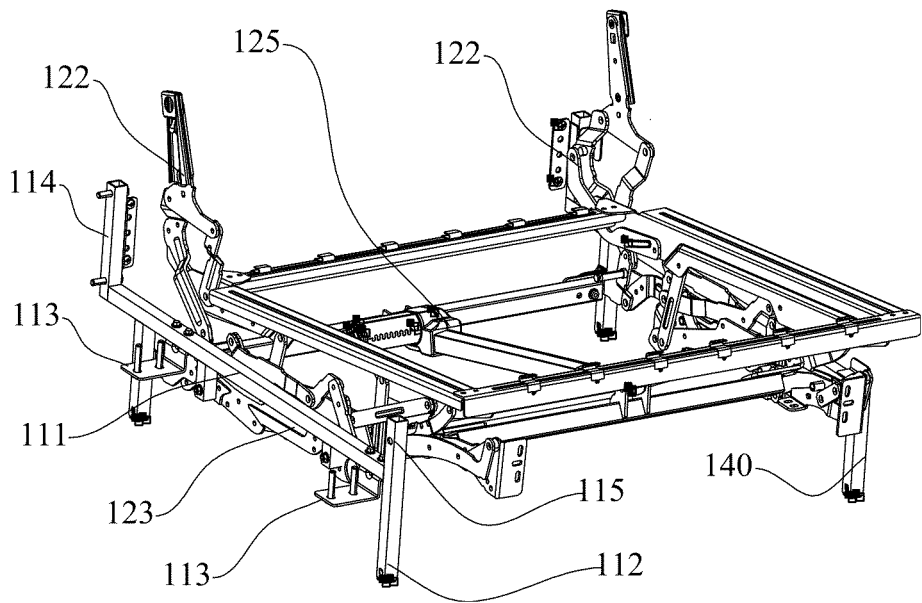


FIG. 4

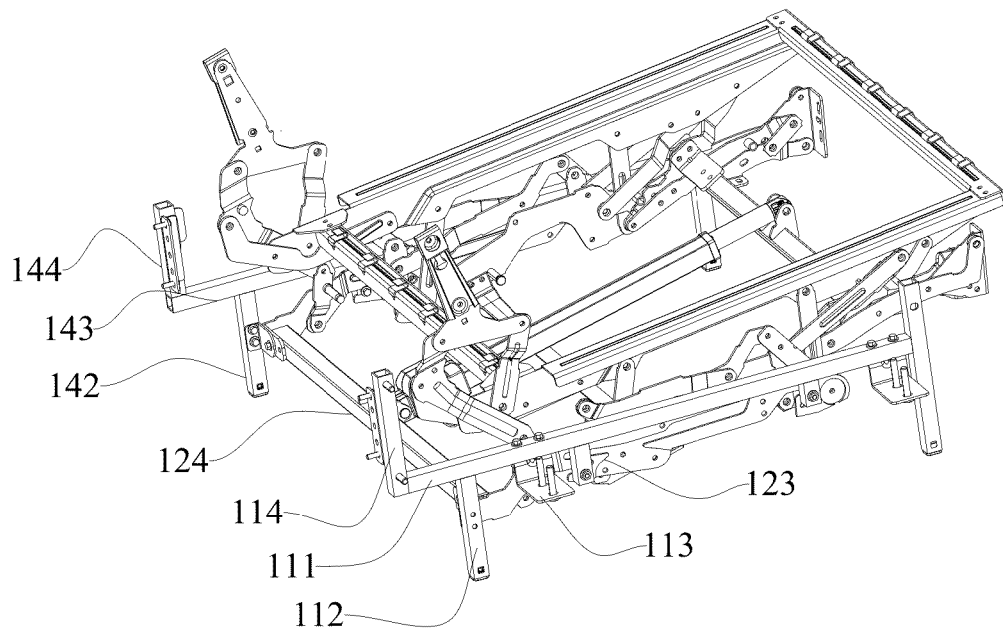


FIG. 5

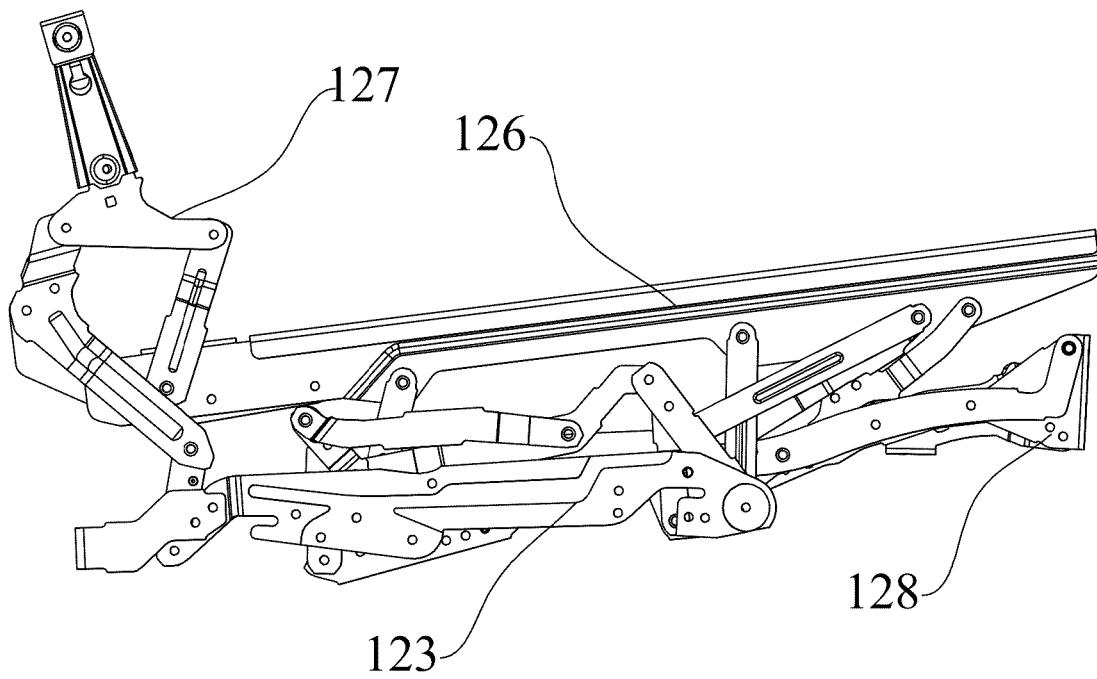


FIG. 6

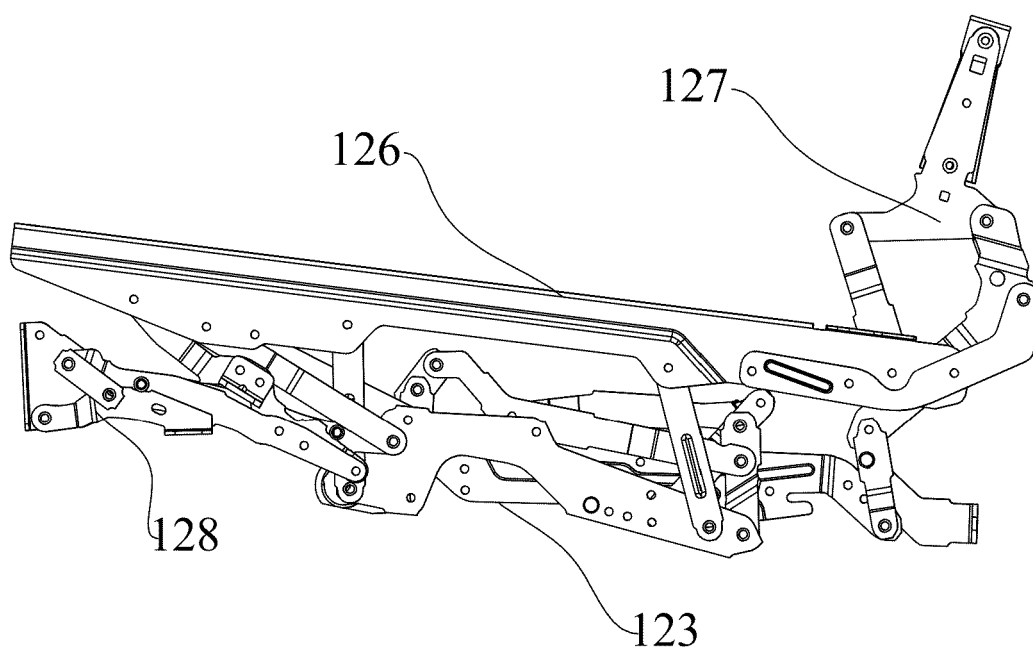


FIG. 7

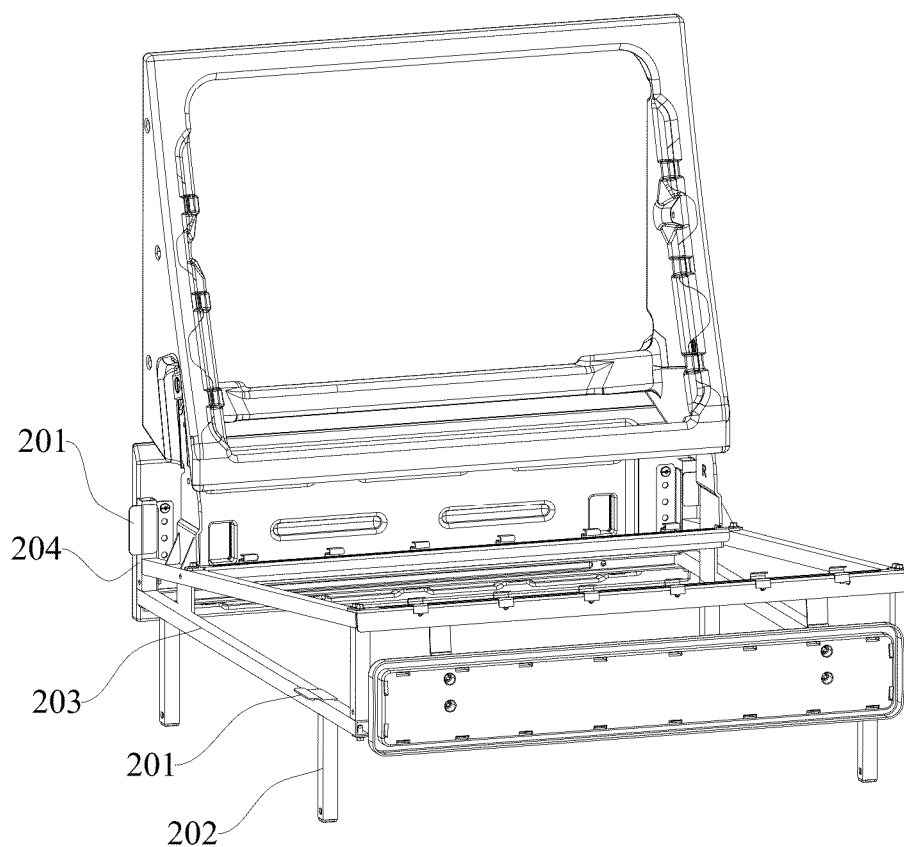


FIG. 8

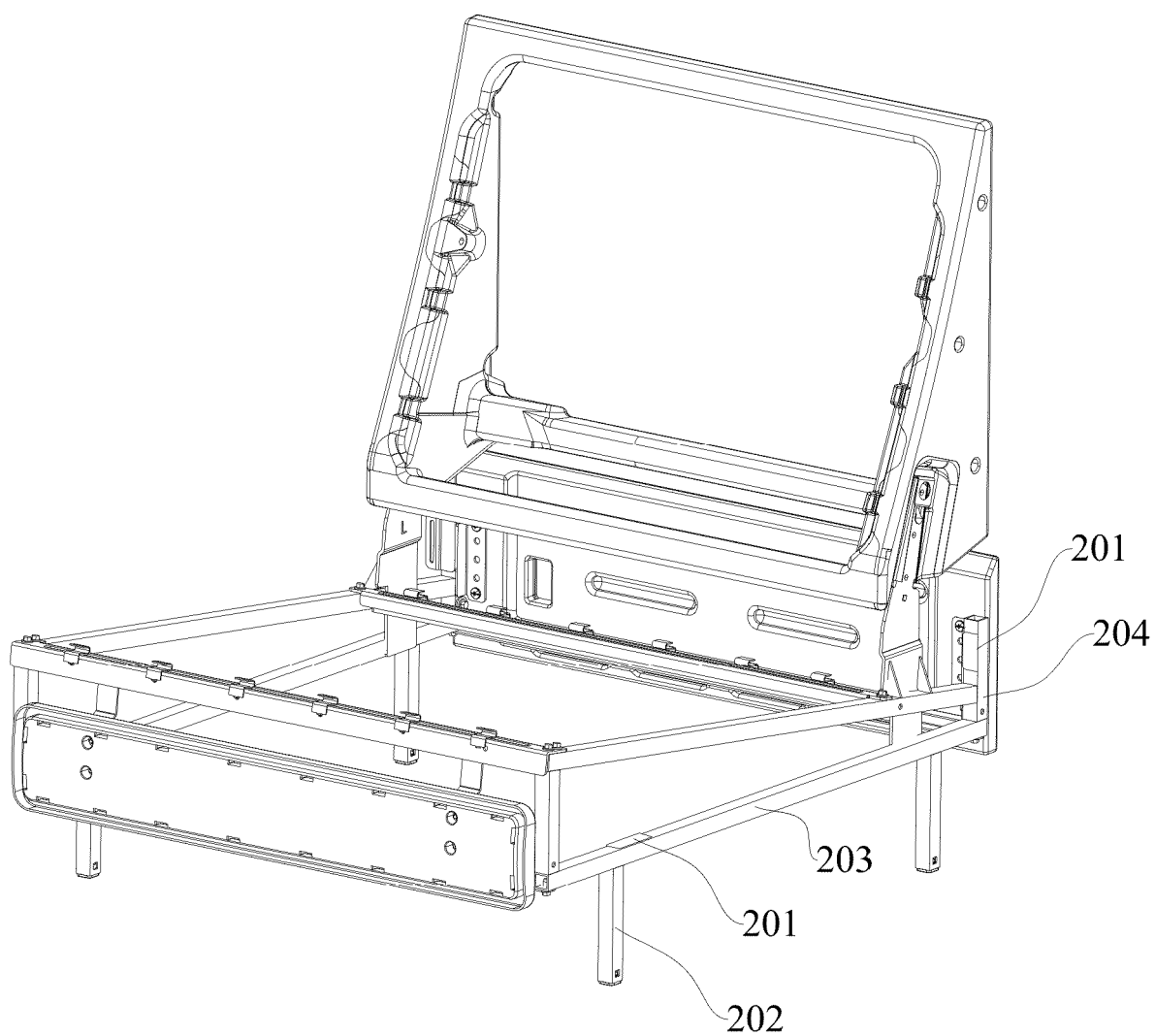


FIG. 9

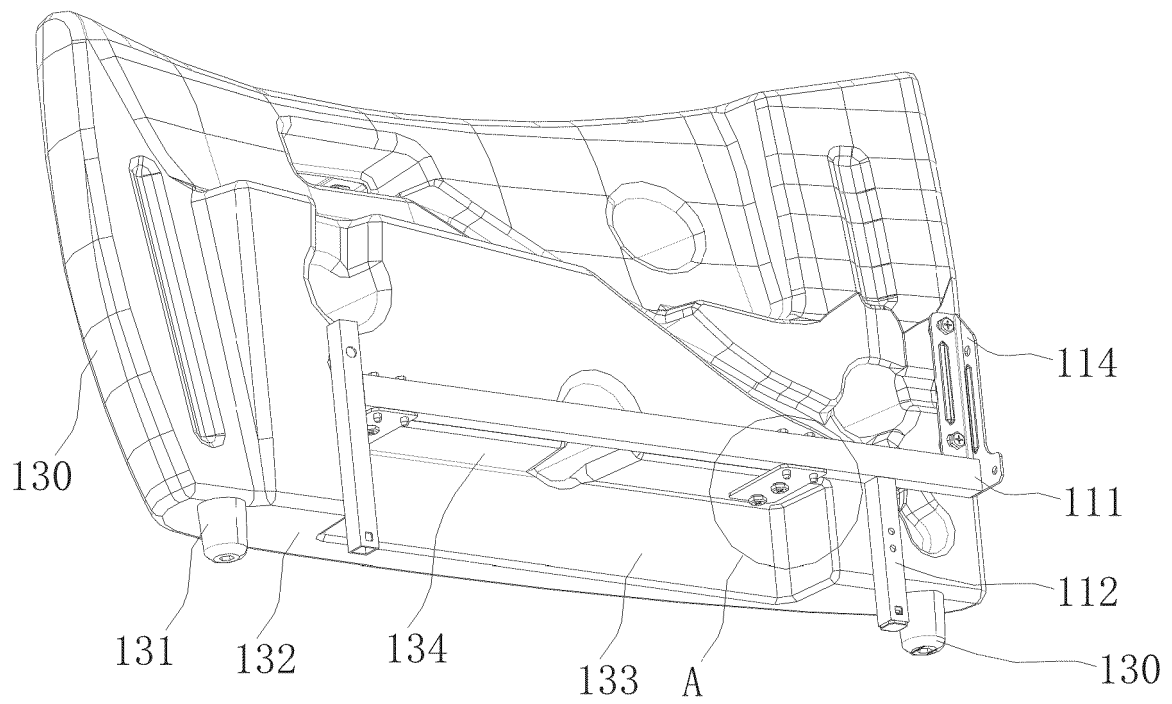


FIG. 10

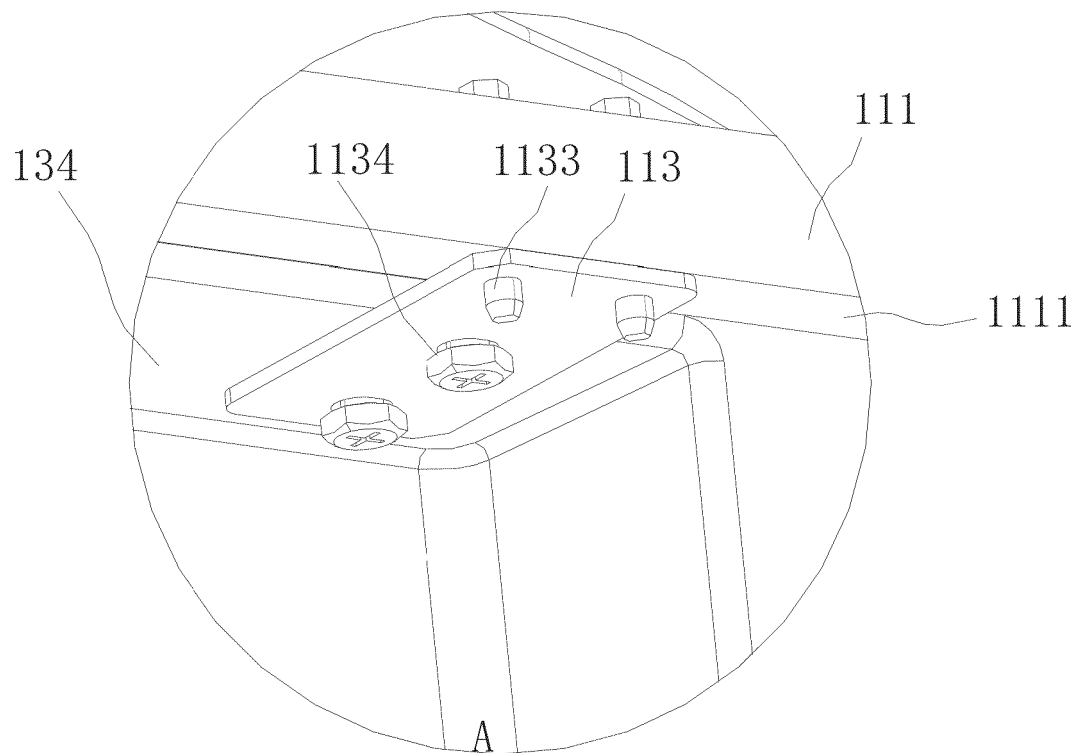


FIG. 11

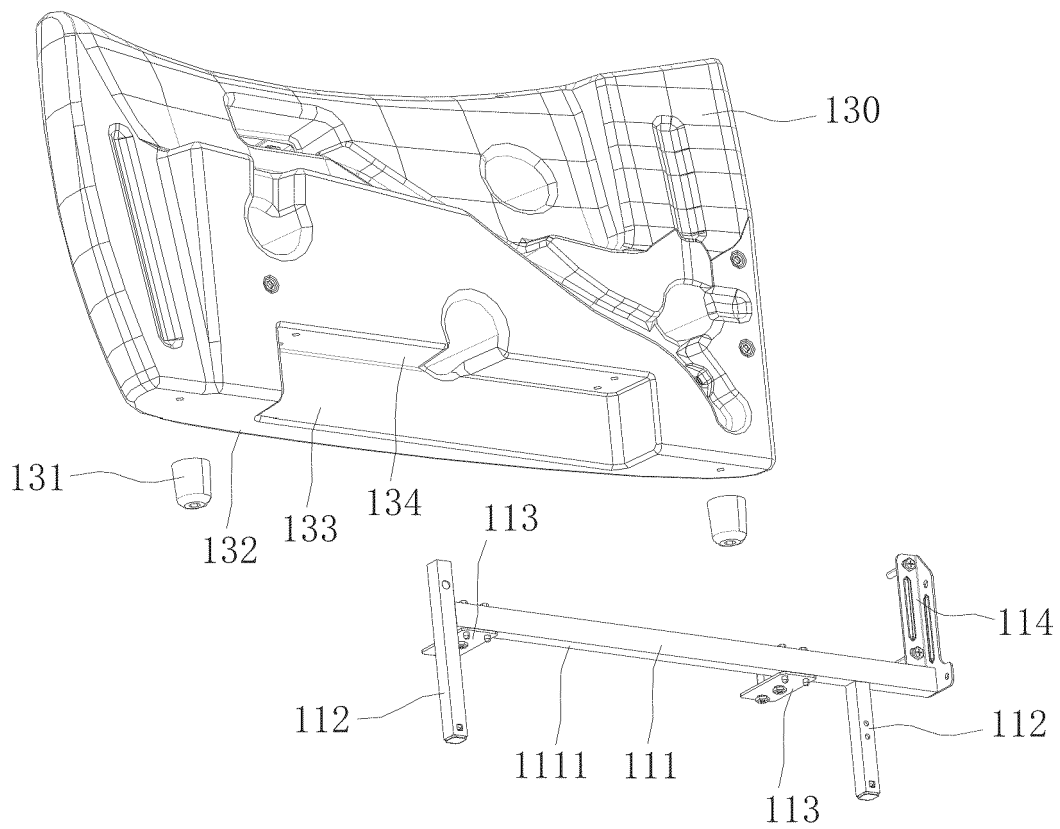


FIG. 12

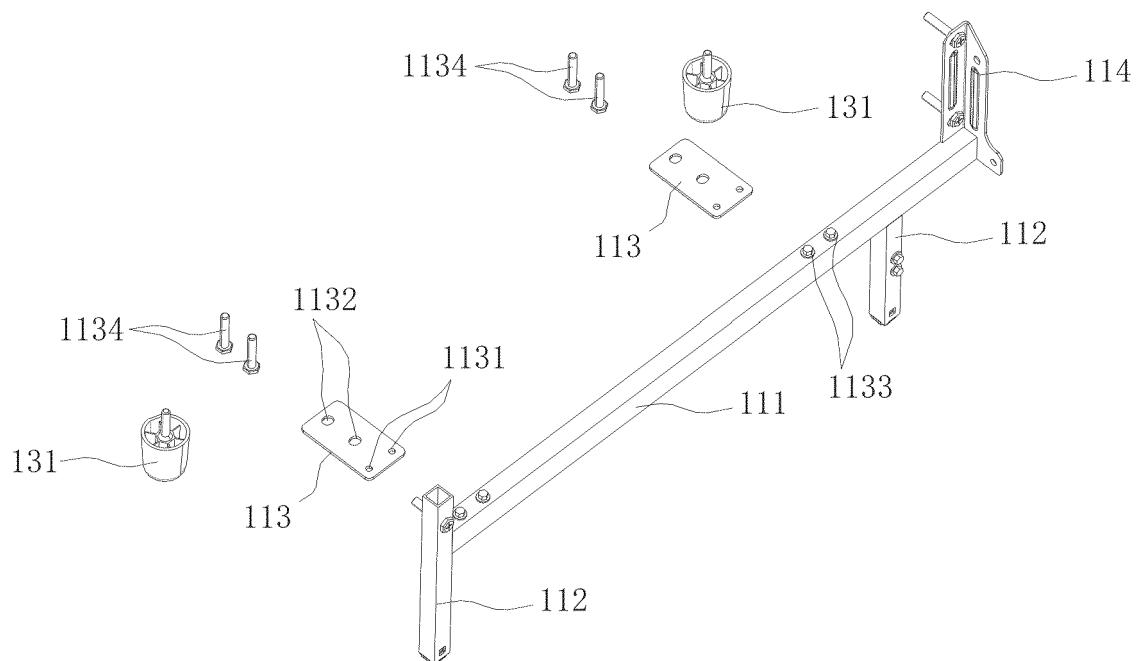


FIG. 13